

# **Exhibit 20**

IPR2021-01041

Rosenberg, Ph.D., Craig

July 7, 2022

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,

Petitioner,

v.

NEONODE SMARTPHONE LLC,

Patent Owner.

Case No. IPR2021-01041

US Patent No. 8,095,879

REMOTE DEPOSITION OF CRAIG ROSENBERG, PhD

Thursday, July 7, 2022

12:11 p.m. EDT

REPORTED BY: Deanna Dean, RDR, CRR

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Thursday, July 7, 2022  
12:11 p.m. EDT

Deposition of CRAIG ROSENBERG, PhD, held  
via Zoom videoconference, before Deanna J. Dean,  
a Registered Professional Reporter, Registered  
Diplomate Reporter, Certified Realtime Reporter,  
and licensed court reporter of the state of New  
Hampshire.

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1 ATTORNEY RODKEY: Okay.

2 A. Okay. It's downloading now.

3 Okay. I have Exhibit 2019 open on my  
4 screen.

5 Q. Okay. Would you please take a moment to  
6 look through Exhibit 2019 and just confirm that  
7 it's the second declaration that you submitted in  
8 this proceeding.

9 A. Yes, it appears to be so.

10 Q. And just for formality, if you'll flip to  
11 the very last page, which would be page 71, is that  
12 your signature there?

13 A. Yes, it is.

14 Q. If you would, please, could you turn to  
15 paragraph 71 of Exhibit 2019.

16 A. Okay, I'm looking at paragraph 71.

17 Q. Okay. And if you look in paragraph 71, in  
18 the fourth line, about halfway across, there's a  
19 sentence that says "While 'gliding' is a particular  
20 type of 'movement,' it does not follow that any  
21 'movement' is 'gliding,' particularly in the  
22 context of touch-based user interfaces."

23 Did I read that right?

24 A. You did.

25 Q. What do you mean by that statement?

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1           A.     Just simply that there are various forms  
2     of movement, and gliding is one form of movement.

3                 In the next sentence, I sort of described  
4     the subset/superset relationship, using the analogy  
5     of a chicken is a type of bird but not every bird  
6     is a chicken. Gliding is a type of movement,  
7     flicking is a type of movement, but they are not  
8     the same.

9           Q.     Would you consider them distinct types of  
10    movement?

11                ATTORNEY HENDIFAR: Objection. Form.

12           A.     I would. Distinct from each other, yes.

13           Q.     Are there other types of movements that  
14    can be used in touch-based user interfaces?

15           A.     I would say so, yes.

16           Q.     Are there a lot of different types of  
17    movements that can be used?

18                ATTORNEY HENDIFAR: Objection. Form,  
19    scope, and relevance.

20           A.     I guess I would need to think about all  
21    the different kinds, but, I mean, tap or touch  
22    would be two other kinds of movement.

23                 So I think there's -- there's a variety of  
24    different kinds. Whether one would consider it to  
25    be a lot or just, you know, more than three or

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1 four, there are a number of different kinds of  
2 movements, and computer programmers and designers  
3 can classify those movements and gestures to enact  
4 different outcomes associated with the computer  
5 program, to recognize different movements and  
6 gestures.

7 Q. So you mentioned gestures. Other than  
8 flick and glide, what other kind of gestures can be  
9 used in touch-based user interfaces?

10 ATTORNEY HENDIFAR: Objection. Form,  
11 scope, relevance.

12 A. Well, I just mentioned clicking, which  
13 could be just a tap, so down and up; or it could be  
14 a touch, which is just down; or it could be -- I'm  
15 just -- this is -- by no means is this fully  
16 exhaustive, this list. This is just me giving some  
17 examples.

18 There's long press. There's harder  
19 presses, if the input can detect the amount of  
20 pressure. There's drag-and-drop movements. There  
21 can be a variety of different kinds of movements.

22 Q. So if I'm understanding you right, then,  
23 movement is like a -- sorry. I'm going to go back  
24 to basic science class here with, you know,  
25 kingdom, phylum, genus, species, all like that.

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1 Movement is like a genus; it's like a  
2 superset. And then gliding or flicking would be a  
3 species; it's a subset of that genus of movement.  
4 Right?

5 ATTORNEY HENDIFAR: Objection. Form.

6 A. Yes. Like I testified earlier, movement  
7 is a superset and gliding is a subset. I agree  
8 with that.

9 Q. And for gliding and flicking, if the user  
10 is using a pen, which I believe is an example that  
11 you have in your declaration, do both of those  
12 movements involve dragging the pen across the  
13 screen for some distance?

14 ATTORNEY HENDIFAR: Objection. Form.

15 A. Well, I wouldn't characterize it as  
16 dragging. I wouldn't say that, because I would --  
17 it's important to distinguish between a flick and a  
18 drag-and-drop, or even a swipe and a drag-and-drop.

19 But there -- I would really need to think  
20 about this and analyze this carefully, and I do  
21 talk about in my declaration the differences  
22 between flick and swipe.

23 So if your question -- is your question  
24 does a flick require at least some minimal distance  
25 on the screen? Is that -- I want to be responsive

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1 to your question.

2 Q. Sure. So let me break it down a little  
3 bit.

4 So for a flick gesture, does the object  
5 performing the flick gesture need to -- and I'll  
6 use a different word -- need to contact the screen  
7 for some distance before it's lifted off?

8 ATTORNEY HENDIFAR: Objection. Form.

9 A. Well, I haven't fully analyzed this. This  
10 isn't something that the petitioner's expert, that  
11 I'm aware of, had opinions on that, that I needed  
12 to respond to.

13 But if -- as a programmer, I -- as a  
14 programmer, if it didn't travel any distance at  
15 all, then that would be equivalent to a touch or a  
16 tap. If it went down on one pixel and went up on  
17 the same pixel, or just stayed down on the one  
18 pixel and there was no lateral, you know, vertical  
19 or horizontal movement at all, I would need more  
20 time analyzing it.

21 But my initial thought is I don't believe  
22 that that could be detected as a flick. However,  
23 if it traveled just one additional pixel in any  
24 direction, then the computer could recognize that  
25 as a flick.

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1           So I guess your question said some  
2 distance. I would think -- and, again, this is a  
3 very preliminary analysis here on the fly,  
4 unrelated to what I understand is what Dr. Wobbrock  
5 has opined on -- that there would likely need to be  
6 at least one pixel worth of movement, at a minimum.

7           Q. Didn't you testify in your declaration  
8 that gliding is a "relatively slower, smoother, and  
9 longer motion, while flick is a sharper, faster and  
10 shorter movement"?

11          A. I believe that's correct. If you want to  
12 point me to the paragraph where I said that, I can  
13 read from it. But that sounds accurate.

14          Q. Sure. And I'll point you to the paragraph  
15 just so you can confirm. It's paragraph 84. It's  
16 the last sentence of that paragraph.

17          A. Yes. Yes, I've read that.

18          Q. So you are drawing some distinction based  
19 on the length of the movements. Correct?

20                 ATTORNEY HENDIFAR: Objection. Form.

21          A. That is correct.

22          Q. What is the maximum length that a flick  
23 can be?

24                 ATTORNEY HENDIFAR: Objection. Form.

25                 Scope and relevance.

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1 did you draw the boundary between a flick and a  
2 glide?

3 ATTORNEY HENDIFAR: Objection. Form,  
4 scope, and relevance.

5 A. I believe this is the fourth time you've  
6 asked the same question where you're trying to  
7 elicit a certain number, at what length, you know,  
8 what's the distance. And I'm politely saying for  
9 the fourth time it's not my role to on the fly to  
10 do -- I haven't done that analysis because it  
11 wasn't required of me. What was required of me was  
12 to be responsive to Dr. Wobbrock and to apply the  
13 plain -- analysis of plain and ordinary, which is  
14 what I did.

15 Q. So, to be clear, although you said you did  
16 an analysis of the plain and ordinary meaning of  
17 flick and glide, used the meanings of flick and  
18 glide to distinguish a prior art reference from the  
19 '879 patent in your opinion, you cannot offer the  
20 delineation between flick and glide in terms of  
21 distance moved. Correct?

22 A. I guess that's one way to put it, but I  
23 wouldn't put it that way. The way I would put it  
24 is the way that I've said a few times now, which is  
25 I have been responsive to Dr. Wobbrock and

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1 Dr. Wobbrock did not offer any opinions himself on  
2 the distance between flick and glide. I would have  
3 been happy to read his opinion, go through his  
4 analysis, point out where I agree with  
5 Dr. Wobbrock, where I might disagree with  
6 Dr. Wobbrock.

7 But that wasn't done. My understanding is  
8 just to do an analysis of what one of skill in the  
9 art, a POSITA, would understand when reading the  
10 terms "flick" or "glide" or "swipe." And I've done  
11 that analysis in the various paragraphs that I  
12 pointed you to. I think it was 40, 77, and 84, at  
13 least in those -- those paragraphs. So I don't  
14 have a number for you how many meters per second,  
15 how many pixels per second.

16 And, by the way, that one number in my  
17 analysis would also depend. It would probably  
18 depend on many different things. It would depend  
19 on the screen size. It would depend on the  
20 resolution of the screen. It would probably depend  
21 on the input device, whether you're using a stylus,  
22 whether you're using a light pen, whether you're  
23 using a finger. It would probably depend on the  
24 task.

25 So it's -- the question, I think, is -- I

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1 don't want to say your question is flawed because I  
2 certainly don't want to be disrespectful. But I  
3 think that one number doesn't suffice to answer  
4 that question what the difference between a flick  
5 and a glide. It would really depend on so many  
6 attributes of both systems anyway.

7 Q. So in some cases, depending on different  
8 systems, what's considered in one system might be  
9 considered a glide in another, depending on all the  
10 factors that you just listed?

11 ATTORNEY HENDIFAR: Objection. Form,  
12 scope, and relevance.

13 A. I can't answer that. I think really the  
14 difference between a flick and a glide are -- are  
15 best -- my opinions related to that, the plain and  
16 ordinary meaning, which is what controls -- to my  
17 understanding, "control" might not be the best,  
18 accurate word -- but what's appropriate in this  
19 case is on paragraphs 77, 40, and -- I'm sorry --  
20 40, 77, and 84, with the dictionary definitions  
21 being on 77. So, there, you can see -- see the  
22 differences.

23 I also have a number of graphics on  
24 page 35 and 36 of my report. A POSITA would  
25 understand the difference between a flick and a

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1 of the original claims as filed?

2 ATTORNEY HENDIFAR: Objection. Form.

3 A. Again, I'd need to review the prosecution  
4 history, but I believe the -- at a high level, the  
5 term was "movement" or "move," and that that was  
6 narrowed to "glide" or "gliding away," after  
7 discussions with the applicant, after reviewing the  
8 video, to properly distinguish between this  
9 superset, which is movement, to a subset, a more  
10 narrowed claim, which is gliding or gliding away.

11 I do talk about that in my declaration if  
12 you'd like me to find the paragraph numbers.

13 Q. No, that's fine. I just want your general  
14 understanding for now.

15 To be clear, the '879 patent doesn't  
16 describe the speed of movement of the thumb or the  
17 finger moving across the screen when activating the  
18 icons at the bottom. Correct?

19 A. Well, there are four references in the  
20 '879 that talk about the speed of movement, or the  
21 speed of the movement. If you want me to point  
22 those out, basically the bottom of column 2 talks  
23 about speed of movement. And --

24 Q. So let's go in order here.

25 So the speed of movement in column 2 is

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1 referring to the marking on a list. Correct?

2 A. According to the present invention,  
3 navigation in the list is performed by moving the  
4 object in a direction toward the top of the list or  
5 toward the bottom of the list. This will cause the  
6 marking to move in the same direction. The speed  
7 of movement of the marking is lower than the speed  
8 of movement of the object with the purpose of  
9 making navigation easier. That's correct, yes.

10 Q. So that's not the activation of the icons  
11 at the bottom of the screen shown in Figure 1?

12 A. Yes, I agree with that.

13 Q. Okay. And you said speed was somewhere  
14 else?

15 A. No. Column 5, around lines 33, and  
16 they're talking about the same thing as we just  
17 discussed previously there.

18 So the fact that the '879 also didn't  
19 describe a single number, if you will,  
20 corresponding to -- well, I mean, I don't want to  
21 anticipate your question, so I'll just let you  
22 speak. I think it sounded like to me you were  
23 trying to ask if the '879 had anything to  
24 distinguish between a flick or a swipe. But like I  
25 said, the '879 patent is all about swipe. It's all

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1 about moving away.

2 Q. Doesn't a flick also move away from a  
3 touched point?

4 A. Well, it's gliding away. Let me be more  
5 precise. Gliding away.

6 We spoke about how movement is a superset,  
7 and swipe and glide are subsets, and even the  
8 patent office agrees that movement was too general.  
9 So it's -- it was narrowed to be a gliding away.

10 And so, yes, gliding is moving, and, yes,  
11 flicking is moving, but they are distinct from one  
12 another and moving is too broad.

13 Q. And flicking is moving away from a touched  
14 point. Correct?

15 A. As I just said, flick is a kind of  
16 movement and swipe is a kind of movement, but both  
17 of those, the patent office thought were too broad  
18 and unpatentable in that previous form of the  
19 claim. So the claim was narrowed to be more  
20 specific to gliding.

21 Yes, basically, to use the analogy, a  
22 glide is a bird and a flick is a bird -- I'm sorry.  
23 A glide is a move -- to get my analogy straight  
24 here, chicken and bird. Chicken is the subset.

25 So you've got a chicken and you have a

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1 understanding of what a function is.

2 Q. So what definition of "function" did you  
3 apply when you wrote your declaration?

4 ATTORNEY HENDIFAR: Objection. Form,  
5 scope, and relevance.

6 A. I think -- I don't intend, unless you want  
7 me to -- which I would think you would not want me  
8 to -- to go through each of the 77 occurrences.

9 But just to start at the first couple of  
10 them, in the abstract of the '879 patent, it says  
11 the menu area 2 is adopted to present a  
12 representation of a first item 21 and a second item  
13 22 and a third predefined function.

14 And we -- you can see -- I guess, let me  
15 go to the most appropriate figure for you.

16 In Figure 1, we see elements 21, 22, and  
17 23, and there's three different icons that bring up  
18 three different user interfaces.

19 So at a high level, the function in '879  
20 is bringing forward for the user the appropriate  
21 user interface associated with the icon that was --  
22 that was swiped on, the icon that was glided away  
23 from, to use the term that's in the claim.

24 Q. So the definition of "function" that you  
25 applied was bringing forth the appropriate user

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1 interface associated with the icon that was glided  
2 away from?

3 ATTORNEY HENDIFAR: Objection. Form,  
4 scope, relevance.

5 A. Well, in general, like I said, I also --  
6 by plain and ordinary meaning, "function" can be  
7 broad function and computer programming could be  
8 like a method. A function is a method. So there's  
9 data and there's functions. It's an operation.  
10 It's an algorithm. It can be called. It can have  
11 arguments.

12 So if one were to look at the code to  
13 bring up the user interface associated with a given  
14 icon by gliding away from it, one would find a  
15 function call or a function, oftentimes with  
16 arguments. So it can be broader than the narrow --  
17 what's described in the abstract.

18 I think the abstract is -- is important.  
19 The abstract of '879 is -- is important and  
20 relevant because they talk about that function of  
21 displaying the appropriate interface. But one of  
22 skill in the art wouldn't say that a function --  
23 you know, dialing a phone number is a function in  
24 Robertson. Displaying a phone number is a  
25 different function in Robertson. So there are

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1 functions in Robertson, too.

2 Function is broader than just bringing up  
3 a user interface, but that's how it's used at least  
4 in part of the '879 patent.

5 Q. So can a representation, then, in the '879  
6 patent have different functions associated with it?

7 ATTORNEY HENDIFAR: Objection. Form,  
8 scope, and relevance.

9 A. Say -- please say the question one more  
10 time.

11 Q. Yeah.

12 Can a representation in the '879 patent  
13 have different functions, or have more than one  
14 function associated with it?

15 A. Yeah. I believe you asked that --

16 ATTORNEY HENDIFAR: Objection.

17 THE WITNESS: I'm sorry, Parham. Go ahead  
18 with any objection.

19 ATTORNEY HENDIFAR: Objection. Form,  
20 scope, and relevance.

21 A. I believe I answered that question. I'm  
22 not sure if it was just before the break or just  
23 after the break. But that's not something that  
24 Dr. Wobbrock opined on. So my role, being  
25 responsive to Dr. Wobbrock, I have not considered

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1 that. Yeah, I think that was the same question you  
2 asked earlier.

3 Q. All right. I'm still -- you gave kind of  
4 a long rambling answer, so I'm still trying to  
5 understand if you can do it more succinctly.

6 What is your general understanding of what  
7 a function is?

8 ATTORNEY HENDIFAR: Objection. Scope,  
9 relevance, and form.

10 A. In general or in the context of this  
11 patent?

12 Q. Let's start with in general.

13 A. In general and in software engineering, it  
14 would be a method, a procedure. Sometimes it takes  
15 the form of an algorithm. It usually invokes some  
16 action. Sometimes it's visible to the user.  
17 Sometimes it may not be visible to the user.

18 Just in general, functions are one of the  
19 basic building blocks of computer programming. You  
20 have data and you have functions, and functions can  
21 take data in terms of arguments. They can  
22 manipulate data. They can return data. Functions  
23 can call other functions. Functions can even have  
24 functions as their argument.

25 So it's a -- it's very broad in terms of

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1 computer programming and what you can do with  
2 functions, and it's a big part of programming, both  
3 procedural as well as object-oriented programming.

4 Q. Speaking of objects, what's a first-class  
5 object in a user interface?

6 ATTORNEY HENDIFAR: Objection. Form.

7 A. Well, in general, or in -- as Robertson  
8 defines it?

9 Q. In general.

10 A. Okay. So, in general, the first-class  
11 object can appear in expressions. They can be  
12 assigned to variables. It can be used as arguments  
13 in functions. Functions can return them. They can  
14 encapsulate data or behaviors. It's kind of like a  
15 standalone computer class -- I don't know how much  
16 you know about computer programming; I assume  
17 some -- that you can think of a class that may have  
18 attributes associated in the class, and you can  
19 pass that class to another function. You can save  
20 it to disk and return it. It's -- it's a lot more  
21 portable. You can assign it to variables. It just  
22 gives the programmer much more flexibility than  
23 something that's more temporary and not a  
24 first-class object.

25 In Robertson, they equate a first-class

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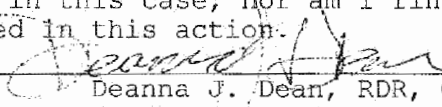
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## C E R T I F I C A T E

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3 I, Deanna J. Dean, a New Hampshire Licensed  
4 Court Reporter, Registered Diplomate Reporter, and  
5 Certified Realtime Reporter, do hereby certify that  
6 the foregoing, to the best of my knowledge, skill,  
7 and ability, is a true and accurate transcript of  
8 my computer-aided electronic stenographic notes of  
9 the deposition of CRAIG ROSENBERG, PhD, who was  
10 duly sworn, taken at the place and under the  
11 circumstances present on the date hereinbefore set  
12 forth.

13 I further certify that present on behalf  
14 of the Petitioner, Attorney KEVIN D. RODKEY, ESQ.  
15 and YI YU, PHD, ESQ. of FINNEGAN, HENDERSON, FARABOW,  
16 GARRETT & DUNNER LLP, and on behalf of the Patent  
17 Owner: NEONODE SMARTPHONE LLC, was PARHAM HENDIFAR, ESQ.  
18 of LOWENSTEIN & WEATHERWAX LLP.

19 I further certify that I am neither attorney  
20 or counsel for, nor related to or employed by any  
21 of the parties to the action in which this  
22 deposition was taken, and further that I am not a  
23 relative or employee of any attorney or counsel  
24 employed in this case, nor am I financially  
25 interested in this action.

  
Deanna J. Dean, RDR, CRR  
NH LCR No. 87 (RSA 310-A)

Signed this 14th day of July, 2022

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